

WHAT IS CLAIMED IS:

1. An apparatus for audio coding, comprising:  
a high-frequency audio coder which encodes  
high-frequency components of a digital audio signal;  
5 a downsampling unit which lowers a sampling  
frequency of the same digital audio signal as the  
high-frequency audio coder processes;  
a noise suppressor which suppresses noise  
components contained in the signal from the  
10 downsampling unit; and  
a low-frequency audio coder which encodes the  
signal processed by the noise suppressor.
2. An apparatus according to claim 1, further  
comprising a second noise suppressor which suppresses  
15 high-frequency noise components of the digital audio  
signal before the digital audio signal is processed by  
the high-frequency audio coder and the downsampling  
unit.
3. An apparatus according to claim 1, wherein  
20 when the high-frequency audio coder is disabled, the  
second noise suppressor skips suppression of the  
high-frequency noise components and allows the digital  
audio signal to pass through it.
4. An apparatus according to claim 1, wherein  
25 when the high-frequency audio coder is enabled, the  
noise suppressor skips suppression of the low-frequency  
noise components, and inputs the digital audio signal

to the low-frequency audio decoder.

5        5. An apparatus according to claim 1, wherein the high-frequency audio coder includes a high-frequency noise suppressor which suppresses noise components contained in the encoded high-frequency audio signal.

6. An apparatus according to claim 1, wherein the low-frequency audio coder identifies a silence signal from the digital audio signal, and outputs a signal indicating the silence signal to the high-frequency  
10        audio coder,

the high-frequency audio coder includes a high-frequency noise suppressor which suppresses noise components contained in the encoded high-frequency audio signal, and

15        the high-frequency noise suppressor subtracts a value corresponding to a gain of the silence signal from the encoded high-frequency audio signal in accordance with the silence signal.

20        7. An apparatus according to claim 1, wherein the high-frequency audio coder includes a high-frequency noise suppressor which suppresses noise components contained in the encoded high-frequency audio signal, and

the apparatus further comprises:

25        a CPU which controls to enable or disable a function of the high-frequency noise suppressor in accordance with a coding mode of the digital audio

signal.

8. An apparatus for audio coding, comprising:

a first echo suppressor which suppresses  
high-frequency echo components of a digital audio  
5 signal;

a high-frequency audio coder which encodes the  
signal processed by the first echo suppressor;

a downsampling unit which lowers a sampling  
frequency of the same digital audio signal as the first  
10 echo suppressor processes;

a second echo suppressor which suppresses echo  
components contained in the signal processed by the  
downsampling unit; and

a low-frequency audio coder which encodes the  
15 signal processed by the second echo suppressor.

9. An apparatus according to claim 8, wherein  
when the high-frequency audio coder is disabled, the  
first echo suppressor skips suppression of the echo  
components and allows the digital audio signal to pass  
20 through it.

10. An apparatus according to claim 8, wherein  
when the high-frequency audio coder is enabled, the  
second echo suppressor skips suppression of the echo  
components, and inputs the digital audio signal to the  
25 low-frequency audio decoder.

11. An apparatus according to claim 8, wherein the  
high-frequency audio coder includes a high-frequency

echo suppressor which suppresses echo components  
contained in the encoded high-frequency audio signal.

12. An apparatus according to claim 8, wherein the  
high-frequency audio coder includes a high-frequency  
5 echo suppressor which suppresses echo components  
contained in the encoded high-frequency audio signal,  
and

the apparatus further comprises:

a CPU which controls to enable or disable a  
10 function of the second high-frequency echo suppressor  
in accordance with a coding mode of the digital audio  
signal.

13. A method of audio coding, comprising:

encoding high-frequency components of a digital  
15 audio signal;

downsampling the digital audio signal being not  
encoded;

suppressing noise components contained in the  
downsampled digital audio signal; and

20 encoding the digital audio signal the noise  
components of which are suppressed.

14. A method of audio coding, comprising:

suppressing echo components contained in a  
high-frequency range of a digital audio signal;

25 encoding the high-frequency digital audio signal  
the echo components of which are suppressed;

downsampling the digital audio signal;

suppressing echo components of the downsampled digital audio signal; and

encoding a low-frequency digital audio signal the echo components of which are suppressed.